

Claims

1. A lighting device including:

an LED module composed of

a main substrate,

a light emitting diode bare chip provided on a main surface of the main substrate,

a power supply terminal for receiving power from a power supply source, and

a luminous intensity stabilization circuit provided between and electrically connected to the power supply terminal and the light emitting diode bare chip.

2. The lighting device of Claim 1, wherein

the luminous intensity stabilization circuit is a constant current circuit.

3. The lighting device of Claim 2, further including:

a constant voltage circuit that uses the power from the power supply source to supply a constant voltage to the power supply terminal,

wherein, in the LED module, power that has been supplied via the power supply terminal is then controlled by the constant current circuit so as to have a constant current, and the resulting constant current power is supplied to the light emitting diode chip.

4. The lighting device of Claim 2, wherein

the LED module further includes a sub-substrate that is attached on the main substrate, and that has the constant current circuit formed thereon.

5 5. The lighting device of Claim 4, wherein
the sub-substrate is made of one of resin, ceramic, and Si.

10 6. The lighting device of Claim 1, wherein
the LED module is connected to a second LED module in parallel with respect to the power supply source, the second LED module being identical in structure to the LED module.

15 7. The lighting device of Claim 1, further including:
a socket that is connected to the power supply source, wherein the LED module is detachably loaded in the socket.

20 8. The lighting device of Claim 7, wherein
the main substrate has a multi-layer structure composed of an insulative layer and a metal layer, the insulative layer being on a top main side of the main substrate, and the metal layer being on a bottom main side of the substrate,
and the socket includes a heatsink that, when the LED module is loaded in the socket and the socket thereby thermally contacts
25 the metal layer of the main substrate, radiates heat generated by the light emitting diode bare chip during light emission from the LED module.

9. The lighting device of Claim 1, wherein
the LED module further includes a thermal element provided
in a vicinity of the light emitting diode bare chip and connected
to the luminous intensity stabilization circuit, and

5 the luminous intensity stabilization circuit reduces
current supply to the light emitting diode bare chip when the
light emitting diode bare chip rises in temperature to a
predetermined temperature or higher.

10 10. The lighting device of Claim 3, wherein
the LED module further includes an abnormality detection
unit that is provided in a vicinity of the light emitting diode
bare chip and that detects an abnormality in the light emitting
diode bare chip, and

15 the constant voltage circuit includes a control unit that
reduces or stops provision of current to the LED module when the
abnormality detection unit detects an abnormality in the light
emitting diode bare chip.

20 11. The lighting device of Claim 10, wherein
the abnormality detection unit is a thermal element that
detects a temperature abnormality in the light emitting diode
bare chip.

25 12. The lighting device of Claim 3, wherein
the light emitting diode bare chip is one of a plurality
included in the LED module that are divided into groups of light
emitting diodes that are connected in series, the groups being

connected in parallel with each other, and each group having a current detection unit connected thereto, and

the constant voltage circuit includes a control unit that reduces or stops supply of current to the LED module when one
5 of the current detection units detects an abnormality in an amount of current in the light emitting diode bare chips.

13. The lighting device of Claim 1, wherein

the LED module further includes a Zener diode connected
10 to the luminous intensity stabilization circuit, in parallel with the light emitting diode bare chip.